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ABSTRACT

A curriculum alignment chart is presented that translates mathematics goals/indicators into related vocational skills for the construction course in the secondary vocational education curriculum. The chart contains three columns that correlate (1) vocational education performance indicators, (2) vocational education competency and mathematics skill/concept, and (3) relevant mathematics competency indicators. A page that corresponds to the chart provides suggestions for instructing students in the skills listed on the chart and sample learning activities consisting of a variety of test items. Resource materials for teachers are also cited where appropriate. (YLB)

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CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		
015 01. Define surveying. 02. Define mapping. 03. Define latitude lines. 04. Define longitude lines.	015 Define the purpose of surveying and mapping in construction. SKILLS: Read maps Interpret information	GRADE 7 8.04 Locate a place on a highway map by using the coordinate system GENERAL MATHEMATICS 6.02 Interpret information displayed in tables, charts, and diagrams

SELECTED TEACHER HELPS

015 VOCATIONAL EDUCATION COURSE Construction

INSTRUCTIONS TO TEACHER: For information on surveying and mapping, refer to The World of Construction book by Lux and Ray published by McKnight and McKnight Publishing Company, 1970.

INSTRUCTIONS TO STUDENTS: Read the unfinished statements carefully and write the words that complete it correctly.

This test item concerns surveying and mapping.

A. Surveying is defined as the process by which the amount and boundaries of land are determined

B. Mapping is defined as showing the natural and manmade features of a site

INSTRUCTIONS TO TEACHER: For information on surveying and mapping, refer to The World of Construction book by Lux and Ray published by McKnight and McKnight Publishing Company, 1970.

INSTRUCTIONS TO STUDENTS: Read each statement and circle the most correct number choice in the test items below.

This test item concerns surveying and mapping.

A. Which of the following best defines surveying?

1. The process by which the amount of land is determined.
2. The process by which land boundaries are determined.
3. The process by which the amount and boundaries of land are determined.
4. The process by which natural features of a site are determined.

B. Which of the following best defines mapping?

1. The showing of natural and manmade features of a site.
2. The showing of latitude lines.
3. The showing of longitude lines.
4. The showing of a specific place on earth.

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		
016 01. Identify and apply steps in design process (Identifying needs, developing ideas, refining ideas, identifying problems, selecting best design, making working drawing).	016 Identify and describe the construction design process (design factors, design steps, drafting skills). SKILLS: Interpret charts Measure using customary units Solve proportions	GRADE 8 4.02 Find the missing term of a proportion GENERAL MATHEMATICS 5.02 Measure the length of an object to the nearest half-inch CONSUMER MATHEMATICS 1.10 Use a simple interest table to find the simple interest when given the principal, rate, and time 1.11 Use a compound interest table to find how much interest a consumer's money could earn at a given interest rate, time and principal HEATH LEVEL 2 9.4 Measure using the customary system. HEATH LEVEL 6 9.6 Measure lengths with a 1/16 inch ruler.

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VOCATIONAL EDUCATION COURSE Construction

016

INSTRUCTIONS TO STUDENTS: Read each question carefully and circle the most correct number choice under each test item.

This test item concerns identifying and describing the design process.

A. Which of the following design processes is the one most commonly used by designers?

1. Problem identification, decision, and implementation.
2. Beginning ideas, refinement, decision, and implementation.
3. Problem identification, refinement, analysis, and implementation.

B. Which of the following describes the construction design process?

1. A systematic technique of developing a plan for constructing a project.
2. Defining the design problem.
3. Evaluating, controlling, and scheduling the process.
4. Centering the design on a master plan.

INSTRUCTIONS TO TEACHER: For information concerning construction design process, refer to the following books:

1. The World of Construction by Lux and Ray published by McKnight and McKnight Publishing Company, 1970.
2. Exploring the World of Construction by Betts, Fannin, and Hauenstein published by McKnight and Mcknight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Read each question carefully and circle the correct number choices under each test item.

This test item concerns identifying and describing the design process.

A. Which of the following are part of the design process:

1. Problem identification
2. Function
3. Safety
4. Beginning ideas
5. Refinement
6. Cost
7. Appearance
8. Analysis
9. Decisions
10. Maintenance
11. Implementation
12. Drawings

B. Which of the following describe the construction design process?

1. The design process is a systematic technique of developing a plan for constructing a project.
2. The design process is a systematic approach of developing a design for building a structure.
3. The design process defines a problem.
4. The design process evaluates, controls, and schedules a construction project.
5. The design process centers the design on the master plan.

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		
017 01. Identify design factors that should be considered when designing construction projects.	017 Identify design factors (function, safety, maintenance, appearance, and cost). SKILLS: Money problems Read - whole numbers fractions	GRADE 7 1.01 Read word names for whole numbers containing as many as seven digits 4.02 Read and write money (dollars and cents) through $1,000 4.14 Find the solution to a problem solving situation involving a purchase totaling less than $10 with change to be made from a $20 bill GRADE 8 3.01 Read and write fractions with more commonly used denominators. e.g., 2,3,4,5,6,8,10,12,20,25, 50, and 100 GENERAL MATHEMATICS 1.01 Read and write numerals naming whole numbers through billions 4.12 Add and subtract money amounts 4.13 Multiply a money amount by a whole number or a decimal number 4.14 Divide a money amount by a whole number CONSUMER MATHEMATICS 6.12 Estimate the cost of a list of items common to the consumer 9.09 Estimate the cost of a trip when given a cost per mile rate HEATH LEVEL 3 5.4 Solve word problems that involve money.

VOCATIONAL EDUCATION COURSE Construction

017

INSTRUCTIONS TO TEACHER: For information on design factors, refer to Exploring the Construction Industry by Betts, Fannin, and Hauenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Read the question carefully and circle the correct number choices under the test item.

Which of the following are considered design factors?

(A.) Function

B. Identifying needs

(C.) Safety

D. Developing ideas

(E.) Maintenance

(F.) Appearance

G. Selecting the best design

(H.) Cost

INSTRUCTIONS TO TEACHER: For information concerning design factors, refer to Exploring the Construction Industry by Betts, Fannin, and Hauenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Read the following statement carefully and write the correct words in the spaces provided under the test item.

List five design factors that should be considered when designing construction projects.

1. Function
2. Safety
3. Maintenance
4. Appearance
5. Cost

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		
018 01. Identify operations needed for site, preparation. 02. Define grading of a site. 03. Define draining of a site.	018 Identify the operations which may need to be performed in site preparation (clearing, grading, etc.). SKILLS: Measure - length angles Read - whole numbers fractions Parts of a circle Intersecting lines Estimate costs	GRADE 7 6.01 Identify such terms as point, line, segment, plane, ray angle 3.14 Determine the reciprocal of a fractional or mixed number 4.02 Read and write money (dollars and cents) through $1,000 GRADE 8 6.02 Determine the length, width, or height of an object or drawing by measuring to the nearest millimeter or eighth of an inch 2.01 Read and write numbers with as many as three decimal places 3.01 Read and write fractions with more commonly used denominators, e.g., 2,3,4,5,6,8,10,20,25,50, and 100 6.07 Determine the areas of a rectangle, square, triangle, parallelogram, and trapezoid 2.12 Determine the solution of a real world problem involving purchases totaling less than $20 with change to be made from a $20 bill INTRODUCTORY ALGEBRA (PART ONE) 10.02 Identify the radius, diameter, and circumference of a circle 10.05 Find the measure of one of the angles of a triangle, given the measure of the two other angles GENERAL MATHEMATICS 4.12 Add and subtract money amounts

VOCATIONAL EDUCATION COURSE Construction

018

INSTRUCTIONS TO TEACHER: For information on site preparation, refer to The World of Construction by Lux and Ray published by McKnight and McKnight Publishing Company, 1970.

INSTRUCTIONS TO STUDENTS: Read the unfinished sentence carefully and write the words that complete it correctly.

The operations that may be required for site preparation are clearing obstacles, stripping topsoil, filling, and grading and draining

INSTRUCTIONS TO TEACHER: For more information on site preparation, refer to The World of Construction by Lux and Ray published by McKnight and McKnight Publishing Company, 1970.

INSTRUCTIONS TO STUDENTS: Read the test question carefully and circle the most correct letter choice.

Which of the following activities may be required for a site preparation?

(A.) Clearing, removing topsoil, filling, grading, and draining.

B. Laying the footing and foundation.

C. Constructing a temporary building for storing construction tools, materials, and equipment.

D. Installing sewage lines.

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS 019 01. Define the parts of a foundation. 02. Define bearing surface. 03. Define footing. 04. Define supports.	019 Identify foundation types. (bearing surface, footings, upright supports). SKILLS: Measure length Solve proportions Find cost Slope	GRADE 7 4.02 Read and write money (dollars and cents) through $1,000 7.02 Determine length, width, or height by measuring an object or drawing to the nearest centimeter, meter, or appropriate customary unit GRADE 8 4.02 Find the missing term of a proportion 6.02 Determine the length, width, or height of an object or drawing by measuring to the nearest millimeter or eighth of an inch GENERAL MATHEMATICS 4.12 Add and subtract money amounts 4.13 Multiply a money amount by a whole number or a decimal number 4.14 Divide a money amount by a whole number GEOMETRY 9.03 Use proportions to solve geometric problems INTRODUCTORY ALGEBRA (PART TWO) 7.02 Find the slope of a line HEATH LEVEL 2 9.4 Measure using the customary system. HEATH LEVEL 3 5.4 Solve word problems that involve money. HEATH LEVEL 6 9.6 Measure lengths with 1/16-inch ruler.

019 VOCATIONAL EDUCATION COURSE Construction

INSTRUCTIONS TO STUDENTS: Write the correct name of each foundation part next to the corresponding number under the drawing of the foundation below.

INSTRUCTIONS TO STUDENTS: Select from the following list the names of the parts of a foundation. Underline your choices.

1. Footing
2. Pile
3. Slab
4. Bearing Surface
5. Spread
6. Upright Support
7. Rocks

INSTRUCTIONS TO TEACHER: For information concerning foundation parts, refer to the following books:

1. The World of Construction by Lux and Fay published by McKnight and McKnight Publishing Company, 1970.
2. Exploring the Construction Industry by Betts, Fannin, & Hauenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Read the unfinished sentence carefully and write the words in the spaces provided that complete it correctly.

The parts of a foundation are the bearing surface, footing, and upright support.

INSTRUCTIONS TO STUDENTS: Read test items "A" and "B" carefully and write the correct answers in the spaces provided under each statement.

This test item concerns identifying and describing footing types.

A. Identify the following footing types:

1. Spread footing

2. slab or raft footing

3. Pile footing

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CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		
020 01. Perform basic construction skills (measuring and making wood and steel, cutting wood and steel). 02. Build forms and set reinforcements 03. Describe the mixing and placing process in masonry.	020 Describe the steps and process for building foundation walls. SKILLS: Measure length Read fractions Measure - angles mass	GRADE 7 7.04 Determine the mass (weight) of an object by measuring or computing to the nearest gram, kilogram, or appropriate customary unit GRADE 8 6.02 Determine the length, width, or height of an object or drawing by measuring to the nearest millimeter or eighth of an inch 3.01 Read and write fractions with more commonly used denominators, e.g., 2,3, 4,6,8,10,12,20,25,50, or 100 6.04 Determine mass (weight) by meauring to the nearest gram or kilogram, or appropriate customary units INTRODUCTORY ALGEBRA (PART ONE) 10.05 Find the measure of one of the angles of a triangle, given the measure of the two other angles GENERAL MATHEMATICS 5.02 Measure the length of an object to the nearest half-inch ALGEBRA I 6.10 Solve "percent-mixture," "investment," "uniform motion," and "rate-of-work" problems GEOMETRY 1.08 Use of protractor to find the measure of an angle HEATH LEVEL 2 9.4 Measure using the customary unit. HEATH LEVEL 6 9.6 Measure lengths with 1/16-inch rulor.

020 VOCATIONAL EDUCATION COURSE Construction

INSTRUCTIONS TO TEACHER: For additional information concerning foundation walls, refer to The World of Construction by Lux and Ray published by McKnight and McKnight Publishing Company, 1970.

INSTRUCTIONS TO STUDENTS: Write the steps for building a foundation wall in the spaces provided.

Prepare bearing surface, mix and pour concrete, build forms, finish and cure concrete, set reinforcement, remove forms, and finish concrete surfaces are the steps that should be followed when building a foundation wall.

INSTRUCTIONS TO TEACHER: For additional information concerning foundation walls, refer to The World of Construction by Lux and Ray published by McKnight and McKnight Publishing Company, 1970.

INSTRUCTIONS TO STUDENTS: List the steps that should be followed when building a foundation wall in the spaces provided under the test item.

The steps and processes for building foundation walls are:

A. Prepare bearing surface
B. Build forms
C. Set reinforcement
D. Mix and pour concrete
E. Finish and cure concrete
F. Remove forms
G. Finish concrete surfaces

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		
023 01. Identify common pipe types and sizes. 02. Plan plumbing system properly.	023 Identify plumbing systems (cold and hot water, natural gas, fire protection, sewage removal, storm drainage, heating, and cooling). SKILLS: Measure - length angles Read fractions Parts of a circle	GRADE 7 3.01 Read and write fractions GRADE 8 6.02 Determine the length, width, or height of an object or drawing by measuring to the nearest millimeter or eighth of an inch INTRODUCTORY ALGEBRA (PART ONE) 10.05 Find the measure of one of the angles of a triangle, given the measure of the two other angles GENERAL MATHEMATICS 10.08 Identify the parts of a circle (arc, radius, center, diameter, and chord) 5.02 Measure the length of an object to the nearest half-inch HEATH LEVEL 2 9.4 Measure using the customary system. HEATH LEVEL 6 9.6 Measure lengths with a 1/16-inch

023 VOCATIONAL EDUCATION COURSE Construction

INSTRUCTIONS TO TEACHER: For information on plumbing pipes, refer to Exploring the Construction Industry by Betts, Fannin, & Hauenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Write the names of the plumbing pipes in the spaces next to the numbers that represent their sizes.

Cast iron	2" to 3" in diameter
Clay or Concrete	12" and larger in diameter
Copper	1/8" to 12" in diameter
Galvanized	1/8" to 12" in diameter and 20' long
Plastic	1/4" x 4" in diameter

INSTRUCTIONS TO STUDENTS: Complete the test item below by writing the correct words in the spaces provided.

The things that should be considered when planning a plumbing system are:

1. Cost
2. Usefulness
3. Room arrangement with plumbing facilities
4. Diameter and length of pipes to be used in the structure
5. The size of the main pipelines leading in and out of the structure
6. Safety codes
7. Sewer pipeline slopes

INSTRUCTIONS TO TEACHER: For information concerning plumbing, refer to Exploring the Construction Industry by Betts, Fannin, & Hauenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Complete the test item below by writing the correct words in the spaces provided.

A plumbing system should be carefully planned so that it is functional and economical.

INSTRUCTIONS TO TEACHER: For information concerning plumbing, refer to Exploring the Construction Industry by Betts, Fannin, & Hauenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Complete the test item below by writing the correct words in the spaces provided.

When planning a plumbing system, consideration should be given to room arrangement, pipe size, safety codes, and the use of gravity to carry away waste.

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		GRADE 7 3.01 Read and write fractions GRADE 8 6.02 Determine the length, width, or height of an object or drawing by measuring to the nearest millimeter or eighth of an inch INTRODUCTORY ALGEBRA (PART ONE) 10.05 Find the measure of one of the angles of a triangle, given the measure of the two other angles GENERAL MATHEMATICS 10.08 Identify the parts of a circle (arc, radius, center, diameter, and chord) 5.02 Measure the length of an object to the nearest half-inch HEATH LEVEL 2 9.4 Measure using the customary system. HEATH LEVEL 6 9.6 Measure lengths with a 1/16-inch ruler.
024 01. Identify and describe installation processes used with galvanized pipe, copper pipe, plastic pipe.	024 Identify and describe installation processes used with galvanized pipe, copper pipe, plastic pipe. SKILLS: Measure - length angles Read fractions Parts of a circle	

VOCATIONAL EDUCATION COURSE Construction

024

INSTRUCTIONS TO STUDENTS: Complete the following test item, Parts "A" and "B", by writing the correct information in the spaces provided under each part.

This test item concerns identifying and describing the installation process used for galvanized, copper, and plastic pipes.

A. List the names of the following pipe descriptions:

1. Pipes and fittings that are threaded so that they can be screwed together are galvanized pipe.
2. Pipes and fittings that may be threaded or unthreaded for soldered joints are made of copper pipe.
3. Light weight non-corrosive pipes and fittings that are joined together with solvent cement are made of plastic pipe.

B. Describe the installation process used with the following pipes:

1. Galvanized pipe systems are assembled with threaded fittings
2. Copper pipe systems are assembled with threaded or unthreaded soldered fittings. The unthreaded fittings are joined by soldering
3. Plastic pipe systems are assembled with solvent cement

INSTRUCTIONS TO STUDENTS: Answer the following statement by writing the correct information in the spaces provided.

Describe the rough and finish plumbing installation process.

The rough plumbing installation process involves installing the main supply lines, main sewer lines, and all branch piping prior to covering the interior walls of a structure.

The finish plumbing installation process involves installing the main fixtures when a structure nears completion

INSTRUCTIONS TO STUDENTS: Select the answer for the following statement by circling the best letter choice.

The plumbing installation process may be described as:

(A) Rough and finish plumbing

B. Venting all plumbing facilities

C. Installing all plumbing facilities

D. Installing pipe

INSTRUCTIONS TO STUDENTS: Complete the following statement by writing the correct words in the spaces provided.

The plumbing installation process involves rough plumbing, which is accomplished prior to covering the interior walls, and finish fixturing, which is accomplished when a structure nears completion.

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		
029 01. Identify and define sheathing materials. 02. Identify and describe insulation materials for floors, walls, and ceilings.	029 Identify and describe the procedure for enclosing and finishing the exterior. SKILLS: Measure length Square numbers	GRADE 8 6.02 Determine the length, width, or height of an object or drawing by measuring to the nearest millimeter or eighth of an inch GENERAL MATHEMATICS 2.10 Find the square of a number by using a table of squares 5.02 Measure the length of an object to the nearest half-inch HEATH LEVEL 2 9.4 Measure using the customary system. HEATH LEVEL 6 9.6 Measure lengths with a 1/16-inch ruler.

VOCATIONAL EDUCATION COURSE Construction

029

INSTRUCTIONS TO TEACHER: For information on exterior finishing, refer to the following books:

1. Fundamentals of Carpentry, Volume 2 by Durbahn and Sundberg published by American Technical Society, 1975.
2. Introduction to Construction by Huth published by Delmar Publishers, 1980.

INSTRUCTIONS TO STUDENTS: Complete the following statements by writing the correct words in the spaces provided.

A. Wood fiber board is manufactured of wood fiber which is treated, pressed, and cut into sheets or planks.

B. Metal siding is manufactured of aluminum or steel and duplicates wood siding.

C. Wood siding is made of wood and may be installed horizontally or vertically.

INSTRUCTIONS TO STUDENTS: Complete Parts "A" and "B" of the test item below by writing the correct words in the spaces provided in each sentence.

This test item concerns identifying and describing insulation materials for floors, walls, and ceilings.

A. Insulation materials are assigned to mineral, vegetable, and metallic product groups.

B. Insulation materials for floors, walls, and ceilings are made from mineral products such as: sand, glass, mica, asbestos, and certain plastics; vegetable products such as cork, wood, and plant stalks; and metallic products made to reflect heat by its bright shiny surface.

INSTRUCTIONS TO STUDENTS: Match the items in Column "A" with the descriptions in Column "B" by writing the letter choices in the spaces provided to the left of the items in Column "A".

Column A	Column B
D 1. Wood siding	A. Manufactured of wood fiber which is treated, pressed, and cut into sheets or planks.
B 2. Metal siding	B. Made of aluminum and steel in a wide range of styles to duplicate wood siding.
C 3. Plywood	C. Made of wood and may be installed vertically or horizontally.
A 4. Wood fiberboard	D. Made of wood and available in sheets and siding.

INSTRUCTIONS TO STUDENTS: This test item has two parts. Complete Parts "A" and "B" by writing the correct words in the spaces provided.

This test item concerns identifying and describing the procedures for enclosing and finishing the exterior of a structure.

A. The procedures for enclosing and finishing the exterior of a stud structure are: applying sheathing, installing windows, installing doors, installing louvers, installing building paper, installing siding, and completing cornices.

B. The steps for enclosing and finishing the exterior of a stud structure are the following:

1. Apply sheathing
2. Installing windows
3. Installing doors
4. Installing louvers
5. Installing building paper
6. Installing siding
7. Completing cornices

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		
032 01. Define proprietorship, partnership, corporation. 02. Identify financing considerations (stock, promissory notes).	032 Identify considerations and steps for establishing a construction company (purpose, ownership, financing). SKILLS: Investments - stocks notes Percentages	GRADE 8 4.04 Find a percent of a given number, e.g. a % of b = square 4.05 Find a number when a percent of it is given, e.g., c % of square = d 4.06 Find what percent one number is of another, e.g., square % of e = f CONSUMER MATHEMATICS 7.07 Determine the annual dividend received on 100 shares of stock when given the dividend rate 6.07 Compute the discount on a purchase

VOCATIONAL EDUCATION COURSE Construction

032

INSTRUCTIONS TO TEACHER: For information on this test item, refer to Exploring the Construction Industry by Betts, Fannin, & Hauenstein published by McKnight and McKnight Publishing Company, 1976.

If a student's answers are different from those given in the answer section, the teacher should use his or her own judgment as to the correctness of the answers.

INSTRUCTIONS TO STUDENTS: Complete the following sentence by writing the correct words in the spaces provided.

Two approaches in obtaining finances for the operation of a proprietorship are loans and promissory notes.

INSTRUCTIONS TO STUDENTS: Match the items in Column "A" with their definitions in Column "B" by writing the letter choices in the spaces provided to the left of the items in Column "A".

Column A	Column B
B 1. Promissory note	A. A certificate that is evidence of ownership of a special number of shares in a specified corporation.
A 2. Stock certificate	B. A written promise to pay a given sum to a certain person on demand or on a specified date.
C 3. Loan	C. Temporary use to a person on the condition that it will be repaid.

INSTRUCTIONS TO STUDENTS: Circle the letter choices that correctly answer the test question below.

Which of the following are financing considerations that a company uses when in need of money?

(A.) Promissory notes

B. Buying common stock

(C.) Loans

D. Buying bonds

(E.) Selling stock certificates

F. Buying stock certificates

INSTRUCTIONS TO STUDENTS: Define the following terms:

A. Proprietorship - Any business that is owned by one person

B. Partnership - A business enterprise owned and oeprated by two or more people

C. Corporation - A company owned by stockholders who are responsible for electing a president and Board of Directors for planning, organizing, and controlling the company

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		GRADE 8 4.04 Find a percent of a given number e.g., a % of b = square 4.05 Find a number when a percent of it is given e.g., c % of square = d 4.06 Find what percent one number is of another e.g., square % of e - f GENERAL MATHEMATICS 6.02 Interpret information displayed in tables and diagrams, charts 6.07 Compute the discount on a purchase 2.05 Fstimate the difference between two whole numbers 2.07 Estimate the product of two whole numbers 2.09 Fstimate the quotient of two whole numbers 2.03 Estimate the sum of two or more whole numbers Consumer Math 1.10 Use a simple interest table to find the simple interest when given the principal, rate, and time 1.11 Use a compound interest table to find how much interest a consumer's money could earn at a given interest rate time and principal 1.09 Find the amount to be repaid when a loan is obtained with simple interest 1.13 Determine the cost of obtaining a bank loan when given the principal, rate, and time (Add-on and discount interest)
034 01. Identify components in an invitation to bid/estimate (type of work, location, time, and place where bids will be open, where and how to get plans and specification for the project. 02. Identify components of a contract (description of the project, location of the project, builders responsibilities, amount of money to be paid for completion of products, method of payment).	034 Define estimating, bidding, and contracting as used in construction. SKILLS: Estimate - cost sums Percentages Interpret tables	

034 VOCATIONAL EDUCATION COURSE Construction

INSTRUCTIONS TO STUDENTS: Complete the following statements by writing the words that complete them correctly.

A. A written agreement between the owner and contractor is called a Contract.

B. A careful calculation of what a job will cost is referred to as estimating.

C. A proposal for services offered for pay is called a bid.

INSTRUCTIONS TO STUDENTS: Match the items in Column "A" with their definitions in Column "B" by writing the letter choices in the spaces provided to the left of the items in Column "A".

Column A	Column B
B 1. Estimating	A. A written agreement between the owner and contractor.
C 2. Bid	B. A careful calculation of what a job will cost.
A 3. Contract	C. A proposal for services offered for pay. It is based upon the estimate plus the adding of overhead and profit.

INSTRUCTIONS TO STUDENTS: Circle the letter choices that answer the following question correctly.

Which of the following are the components to an invitation to bid?

A. The size of the bid required.

(B.) The type of work.

C. The type of paper that the bid must be on.

(D.) The location.

(E.) The time and place of the bid opening.

F. The typing spacing required.

(G.) Where and how plans and specifications are to be made available.

INSTRUCTIONS TO STUDENTS: Define the following construction terms in the spaces provided.

A. Estimating is defined as a careful calculation of what a job will cost

B. Bid is defined as a proposal for services offered for pay. It is based upon the estimate plus the adding of overhead and profit

C. Contract is defined as a written agreement between the owner and contractor

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS 035 01. Identify advantages/disadvantages of renting, leasing, buying a house. 02. Identify factors that affect value of house (neighborhood, site, construction).	035 Describe considerations in selecting housing (buy, rent, location, features). SKILLS: Money problems Comparing numbers	GRADE 7 4.02 Read and write money (dollars and cents) through $1,000 1.05 Use , =, or to compare any two numbers GRADE 8 2.12 Determine the solution of a real world problem involving purchases totaling less than $20 with change to be made from a $20 bill GENERAL MATHEMATICS 4.12 Add and subtract money amounts 4.13 Multiply a money amount by a whole number or a decimal number 4.14 Divide a money amount by a whole number CONSUMER MATHEMATICS 3.01 List advantages and disadvantages of buying a home 3.02 Determine the amount needed for a down payment when the rate (expressed as a percent) and amount of the purchase are given 3.04 Find the total cost of purchasing a home by adding the amount of interest purchase price, closing cost, and other fees 3.08 Compute the yearly amount of rent to be paid when given the monthly amount 3.10 List the advantages and disadvantages of renting a house, apartment, and mobile home HEATH LEVEL 3 5.4 Solve word problems that involve money.

VOCATIONAL EDUCATION COURSE Construction

035 INSTRUCTIONS TO TEACHER: For information concerning this test item, refer to Exploring the Construction Industry by Betts, Fannin, & Hausenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENT: Read the following statements carefully and identify them as being a disadvantage or advantage for renting, leasing, or buying; and write the letter of the statement in line with the choice of housing under the appropriate rating (advantage or disadvantage).

Identify the following statements as being an advantage or disadvantage for renting, leasing or buying housing.

A. A way of testing a neighborhood before buying.

B. The rent can be raised anytime.

C. The rent cannot be raised anytime.

D. The tenant cannot move without being responsible for paying the monthly rent until the lease is up.

E. The interest paid on the mortgage loan is tax deductible.

F. Must pay for repairs, insurance, and taxes.

Choice of Housing	Rating	
	Advantage	Disadvantage
Renting	A	B
Leasing	C	D
Buying	E	F

INSTRUCTIONS TO TEACHER: For information concerning this test item, refer to Exploring the World of Construction by Betts, Fannin, & Hausenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENT: Match the items in Column "A" with the descriptions in Column "B" by writing the letter choices in the spaces provided to the left of the items in Column "A".

Column A	Column B
C 1. Needs	A. Garden, large yard, patio, darkroom, etc.
A 2. Special features	B. Architectural style and location.
B 3. Preferences	C. Space requirements

INSTRUCTIONS TO TEACHER: For information concerning this test item, refer to Exploring the Construction Industry by Betts, Fannin, & Hausenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENT: Answer this test item by writing the correct information in the spaces provided.

Before selecting housing, an individual should consider their:

A. Needs (space requirements)

B. Need for special features (garden, patio, etc.)

C. Preferences (architectural style and location)

INSTRUCTIONS TO STUDENT: Circle the letter choices that indicate the factors that affect the value of a house.

A. Neighborhood
B. Closing cost
C. Site

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CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS		GENERAL MATHEMATICS
036 01. Describe the procedures to buying a house (offer to buy, contract of sale, earnest money, loan application, contract signing/closing).	036 Identify methods selling and buying a home (personal sale, realtor).	7.05 Find a percent of a number
		7.05 Find what percent one number is of another
		7.07 Find a number when a percent is known.
	SKILLS: Interest	CONSUMER MATHEMATICS
	Percentages	3.02 Determine the amount needed for a down payment when the rate (expressed as a percent) and amount of the purchase are given
		3.04 Find the total cost of purchasing a home by adding the amount of interest, purchase price, closing cost and other fees
		3.08 Compute the yearly amount of rent to be paid when givent the monthly amount
		3.10 List the advantages and disadvantages of renting a house, apartment, and Mobile home
		1.08 Use the simple interest formula to find the simple interest when given the principal, rate, and time.
		6.07 Compute the discount on a purchase
		1.09 Find the amount to be repaid when a loan is obtained with simple interest
		1.13 Determine the cost of obtaining a bank loan when given the principal, rate, and time (Add-on and discount interest)
		3.03 Use a mortgage loan schedule to determine the monthly cost for repaying a loan when given the number of years for which the loan is obtained and and the mortgage amount
		3.05 Determine how much of the monthly mortgage payment is used to reduce the balance of the debt and how much is used to pay the interest

VOCATIONAL EDUCATION COURSE Construction

036

INSTRUCTIONS TO STUDENTS: Complete Part "A" of this test item by writing the correct words in the space provided. Answer Part "B" by describing the steps for selling a home in the spaces provided.

This test item involves selling and buying a home through a realtor.

A. When selling a home through a realtor, a listing contract is prepared and signed giving the realtor the right to sell the home for a certain percentage of the selling price within a given period of time.

B. Buying a home through a realtor involves:

1. Making an offer to purchase
2. Signing a purchase agreement
3. Paying earnest money
4. Making a title search
5. Making financial arrangements
6. Signing the contract papers
7. Transferring and recording the deed

INSTRUCTIONS TO STUDENTS: Answer the following question by circling the correct letter choices.

Which of the following options do people have when buying and selling a home?

(A) Selling the home themselves.
(B) Buying the home from the owner.
C. Buying the home through an advertising company.
D. Buying the home from a person who is neither the owner nor a realtor.
(E) Buying the home through a realtor.
(F) Selling the home through a realtor.
G. Selling the home through a person who is not a realtor.

INSTRUCTIONS TO STUDENTS: Answer the following question by circling the best letter choices.

Which of the following are methods of selling and buying a home?

(A.) Personally or through a realtor.
B. Personally or through a person who is not a realtor.
C. Through a realtor or a person who is not a realtor.
D. Personally or through an advertising company.

CURRICULUM ALIGNMENT CHART

VOCATIONAL EDUCATION COURSE Construction

VOCATIONAL EDUCATION PERFORMANCE INDICATOR	VOCATIONAL EDUCATIONAL COMPETENCY MATH SKILL/CONCEPT	RELEVANT MATH COMPETENCY INDICATORS
INDICATORS 01. Identify advantages/disadvantages of renting, leasing, buying a house. 02. Identify factors that affect value of house (neighborhood, site, construction).	035 Describe considerations in selecting housing (buy, rent, location, features). SKILLS: Money problems Comparing numbers	GRADE 7 4.02 Read and write money (dollars and cents) through $1,000 1.05 Use , =, or to compare any two numbers GRADE 8 2.12 Determine the solution of a real world problem involving purchases totaling less than $20 with change to be made from a $20 bill GENERAL MATHEMATICS 4.12 Add and subtract money amounts 4.13 Multiply a money amount by a whole number or a decimal number 4.14 Divide a money amount by a whole number CONSUMER MATHEMATICS 3.01 List advantages and disadvantages of buying a home 3.02 Determine the amount needed for a down payment when the rate (expressed as a percent) and amount of the purchase are given 3.04 Find the total cost of purchasing a home by adding the amount of interest purchase price, closing cost, and other fees 3.08 Compute the yearly amount of rent to be paid when given the monthly amount 3.10 List the advantages and disadvantages of renting a house, apartment, and mobile home HEATH LEVEL 3 5.4 Solve word problems that involve money.

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C. The rent cannot be raised anytime.

D. The tenant cannot move without being responsible for paying the monthly rent until the lease is up.

E. The interest paid on the mortgage loan is tax deductible.

F. Must pay for repairs, insurance, and taxes.

Choice of Housing	Rating	
	Advantage	Disadvantage
Renting	A	B
Leasing	C	D
Buying	E	F

INSTRUCTIONS TO TEACHER: For information concerning this test item, refer to Exploring the World of Construction by Betts, Tamblin, & Rosenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Match the items in Column "A" with the descriptions in Column "B" by writing the letter choices in the spaces provided to the left of the items in Column "A".

Column A	Column B
C 1. Needs	A. Garden, large yard, patio, darkroom, etc.
A 2. Special features	B. Architectural style and location.
B 3. Preferences	C. Space requirements

INSTRUCTIONS TO TEACHER: For information concerning this test item, refer to Exploring the Construction Industry by Betts, Tamblin, & Rosenstein published by McKnight and McKnight Publishing Company, 1976.

INSTRUCTIONS TO STUDENTS: Answer this test item by writing the correct information in the spaces provided.

Before selecting housing, an individual should consider their:

A. Needs (space requirements)

B. Need for special features (garden, patio, etc.)

Preferences (architectural style and location)

INSTRUCTIONS TO STUDENTS: Circle the letter choices that indicate the factors that affect the value of a house.

A. Neighborhood
B. Closing cost
C. Site
D. Mortgage payment
E. Construction

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